Shyness, sensation seeking and birth-order position

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Abstract

The study found no relationship between birth-order position and shyness or sensation seeking in a sample of 250 students. Shyness was significantly negatively correlated with total sensation seeking scores and scores on the four subscales, but closer analysis showed that this relationship was mediated by the correlation between shyness and disinhibition. This pattern implies that shyness is wariness specifically in social situations. # 2002 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Research in recent years has provided growing evidence for the construct validity of the personality trait of shyness. For example, studies have shown that the various self-report questionnaire scales that have been devised to measure shyness are inter-correlated to a substantial degree and seem to be measuring a common factor. Thus, Briggs and Smith (1986) undertook an analysis of five scales and reported correlations between them ranging from 0.70 to 0.86, with a mean correlation of 0.77. Shyness is correlated moderately with extraversion (a negative correlation) and neuroticism, whether these are defined in terms of Eysenck's theory of personality (Briggs, 1988) or the 'five factor' model (Asendorpf & Wilpers,

1998). It is possible that within this overall trend there exist sub-groups of shy individuals who are more extraverted (Pilkonis, 1977), nevertheless, there is extensive evidence that shyness scales are moderately and negatively correlated with extraversion scales. Scores on shyness scales also predict behavioural measures of social behaviour (Bruch, 2001) and shyness can be distinguished from the [un]sociability component of extraversion on these measures (Eisenberg, Fabes, & Murphy, 1995; Schmidt & Fox, 1994). This paper aims to contribute to this emerging literature by examining two potential correlates of shyness, sensation seeking and birth-order position.

Sensation seeking has been defined as 'the seeking of varied, novel, complex and intense sensations and experiences, and the willingness to take physical, social, legal and financial risks for the sake of such experiences' (Zuckerman, 1994, p. 27). There are two reasons to investigate correlations between shyness and sensation seeking. The first is that novelty is an important element in the definition of both traits. Apprehension and wariness at the prospect or the reality of novel social situations is central to shyness (Zimbardo, 1977). From a developmental perspective, Kagan (2001) regards shyness as part of a broader temperamental category of 'behavioural inhibition to the unfamiliar', defined in terms of wariness and inhibition in novel non-social as well as social situations. Are shy adults less likely to seek out novel sensations and experiences in general, or is shyness specifically a response to unfamiliar social situations? Factor analysis of sensation seeking scales yields four factors, namely Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Boredom Susceptibility (BS) and Disinhibition (Dis). Items with high loadings on the Dis factor refer to sensation seeking through social activities like parties and dating, and it can be hypothesised that shyness is specifically related to this factor rather than to sensation seeking more generally. There are references to social events in items loading on other factors but these seem to have a different

psychological meaning. Thus, references in BS items to intolerance of repetitive experiences include mention of boring people but these do not refer directly to social interactions and hence it is not hypothesised that this factor is related to shyness. Social interactions are not mentioned in the TAS or ES sub-scales (apart from one ES item referring to avoiding someone who is gay or lesbian).

A second reason for investigating the relationship is that it is valuable to locate shyness and sensation seeking relative to each other within the multidimensional personality sphere. Shyness is correlated with both extraversion (a negative correlation) and neuroticism and can be located within the quadrant that Gray (1987) has identified with greater sensitivity to signals of punishment. Sensation seeking might be thought to be located in the opposite quadrant. The timidity and inhibition of shyness would seem to be the converse of the impulsiveness, risk taking and search for novelty characteristic of sensation seeking, but this has not been demonstrated empirically. Sensation seeking is moderately and positively correlated with extraversion, but this relationship may be mediated by impulsivity rather than by sociability (Zuckerman, 1994). Most studies report the independence of sensation seeking and neuroticism (Zuckerman, 1994) with the exception of one study (Goma-Freixanet, 2001) that reports a low, positive correlation ($r=0.25$) between these dimensions among a sample of 227 women and suggests that the statistical significance of the coefficient is due to the large sample size. The first aim of this study is to examine the relationship between shyness and sensation seeking.

1.1. Birth order

Zimbardo (1977) argued that there was a tendency for single and first-born children to be shy. This suggestion is consistent with

theories of shyness that emphasise motivation to create a desired impression in others together with lack of confidence in the ability to do so (e.g. Leary & Kowalski, 1995). The higher expectations that parents might have for their first-born may give rise to lack of confidence in fulfilling them. There may be more pressure on later born children to develop social skills and hence confidence in order to compete with larger or more powerful siblings.

However, there is little evidence to support the predicted relationship. An unpublished study summarised by Asendorpf (1986) related maternal reports of their children's shyness with the child's birth-order position. Single children were most shy, followed by first-borns, while last-borns were least shy. Macfarlane, Allen, and Honzik (1962) report findings from a longitudinal study that included data on mothers' ratings of their children's shyness (on a single item) collected annually from age 7 to 14 years. First-born girls were more likely than later-born girls to attract a shyness rating but first-born boys were less likely than later-born boys to attract a shy- ness rating. However none of the comparisons involving boys was statistically significant and the difference between first-born and later-born girls was only significant at two age levels, 7 and 11 years. There are questions about the reliability and validity of maternal reports of children's personality, particularly when a single-item rating is involved.

Bell, Schoenrock, Young, Avery, Croft, and Lane (1986) failed to find any relationship between a self-report questionnaire measure of shyness and birth order among a large sample of under-graduate students. Bo¨ gels, van Oosten, Muris, and Smulders (2001) administered a self-report social anxiety questionnaire to a sample of 190 young people aged from 8 to 18 years (64 had been referred to community mental health centre, and a control group of 126 children were recruited from elementary and secondary schools). The focus of the research was the relationship between social anxiety and parental rearing practices, but birth order

information was also collected. Birth order (contrasting only and firstborn with later-born) had a borderline significant beta weight in a regression analysis, with only-children and first-born children having marginally less social anxiety than later-born children. In summary, findings are inconsistent.

Zuckerman (1994, p. 122) suggested that a tendency for first-borns and only children to be higher in sensation seeking was due to their having the exclusive attention of their parents and receiving more varied stimulation. Nevertheless, there are few relevant data, the only direct evidence an unpublished study cited by Zuckerman (1994, p. 121). The second aim of this study is to investigate relationships among birth-order position, shyness and sensation seeking.

2. Method

2.1. Participants

An opportunity sample of 250 undergraduates (96 males, 154 females) in a large British university took part in this study. Their ages ranged from 18 to 52, with a mean age of 22.17 years. Participants studied diverse disciplines and were approached in both social and academic settings, in various humanities, social sciences and science departmental refectories or (with lecturers' permission) prior to classes in those departments.

2.2. Questionnaires

Each participant completed the 14-item version of the Cheek–Buss Shyness Scale (Cheek & Buss, 1981), responding to each item on a five-point Likert scale. Participants also completed the 40-item Sensation Seeking Scale (SSS), Form V (Zuckerman, Eysenck, & Eysenck, 1978). They also completed a short questionnaire about

themselves and their brothers and sisters, and were requested to include the gender and year of birth of each child. Birth-order position was calculated from the years of birth.

2.3. Procedure

Participants were approached individually and asked if they would complete the short questionnaires. Confidentiality was assured, and questionnaires were answered anonymously.

3. Results

The Shyness Scale had satisfactory internal consistency (Cronbach's alpha=0.85). Cronbach's alpha for the total SSS scale was also satisfactory (alpha=0.81). The coefficients for the four SSS subscales were somewhat lower: TAS (0.76), ES (0.59), Dis (0.75) and BS (0.54). These coefficients, including the relatively low values for ES and BS, are comparable with those obtained in previous research as reported by Zuckerman (1994, p. 33). Descriptive statistics for the Shyness and SSS Scales are presented in Table 1.

Bivariate correlations were computed between Shyness and the SSS total scores and subscales for males and females separately, since there are significant gender differences on the SSS sub-scales and total score. The correlation coefficients are displayed in Table 2. For the sample as a whole, and for males and females considered separately, shyness is significantly negatively correlated with total SSS scores. However, whereas for the whole sample the correlations are significant for all of the subscales, a different pattern emerges when the genders are treated separately. Among males, only two of the subscales are significantly correlated with shyness, TAS and Dis, and among females only

Dis is significantly correlated.

The four SSS subscales are significantly inter-correlated, and in order to investigate whether subscales other than Dis are predictors of shyness, three multiple regression analyses were carried out, one for the whole sample and one for each gender. In each analysis shyness was the dependent variable, Dis was entered as predictor in the first step, and the remaining three subscales entered in the second step.

Table 1
Gender and mean (and standard deviation) scores on Shyness and Sensation Seeking Scale (SSS)

	Males	Females	*t*
Shyness	34.71 (8.68)	36.66 (8.48)	1.76
TAS	7.28 (2.53)	6.30 (2.58)	2.92**
ES	6.16 (2.09)	5.42 (1.95)	2.84**
Dis	6.08 (2.54)	4.81 (2.70)	3.71**
BS	3.98 (2.03)	2.40 (1.68)	6.42**
Total SSS	23.49 (6.01)	18.91 (5.95)	5.88**
N	96	154	250

TAS, Thrill and Adventure Seeking; ES, Experience Seeking; Dis, Disinhibition; BS, Boredom Susceptibility.
** $P<0.01$.

Table 2
Gender and correlations between Sensation Seeking Scale (SSS) Form V and Shyness

	Shyness		Total
	Male	Female	
TAS	−0.234*	−0.040	−0.132*
ES	−0.077	−0.129	−0.125*
Dis	−0.234*	−0.181*	−0.219**
BS	−0.137	−0.108	−0.154*
Total SSS	−0.270**	−0.172*	−0.235**

$N=250$. TAS, Thrill and Adventure Seeking; ES, Experience Seeking; Dis, Disinhibition; BS, Boredom Susceptibility.
* $P<0.05$.
** $P<0.01$.

In each of the three analyses, the model with Dis as the sole predictor was statistically significant and the F change statistic was not significant when the remaining SSS Scales were added to the equation (F <1.0 for the whole sample and males; for females, F=1.00, P =0.49). For the sample as a whole, the model with all four subscales included in the equation was significant F (1,

248)=3.87, P<0.01, R=0.244 but only the beta weight for Dis was significant (beta=□0.162, t=□2.18, P<0.05). The model was not significant for the genders analysed separately—for males, F (4, 91)=2.11, P =0.08, R=0.292; for females, F (4, 149)=1.41, P=0.23, R=0.191. Thus, the relationship between Sensation Seeking and Shyness can be explained by the correlation between Disinhibition and Shyness.

The hypothesis that participants who were first-born (N=128) and later-born (N=122) would differ in shyness was tested by ANOVA with birth order (first-born versus later-born) and gender as factors and age as covariate. There were no significant main effects or interaction term. Considering birth-order, the mean (and S.D.) scores were 35.88 (8.87) for first-born and 35.94 (8.33) for later-born, F (1, 245)<1.0. For gender the respective shyness scores were 36.66 for females and 34.71 (8.68) for males, F (1, 245)=2.96, P=0.09. A second analysis separated the scores of 30 only-children from the 98 who were the first-born of siblings. Mean and standard deviation shyness scores for these groups and for later-born children are presented in Table 3. One-way ANOVA with age as covariate found no differences among the three groups F (2, 246)<1.0. As indicated in Section 1, Bo¨ gels et al. (2001) have reported that last-born children had marginally higher social anxiety scores. This trend was investigated for this sample by comparing the shyness scores of last-born children with those of earlier born children by means of ANOVA with gender and birth order (last-born versus earlier-born) as factors. There were no significant effects, nor were there any significant differences when the analysis was repeated, omitting only-children (F<1.0 in each case). Finally, attention was paid to Kagan's (2001) recommendation to consider shyness as a discrete category rather than as a continuous dimension. Extreme groups were formed by taking the top and bottom quartiles on shyness scores but there was no significant relationship between these groupings and birth-order position (Chi-square=1.064, d.f.=1, P=0.30).

Table 3
Birth-order and mean (and standard deviation) scores on Shyness and Sensation Seeking

	Only child	First born of siblings	Later born
Shyness	35.13 (9.81)	36.11 (8.60)	35.94 (8.33)
TAS	5.93 (2.81)	6.54 (2.58)	6.96 (2.54)
ES	5.37 (2.25)	5.50 (1.97)	5.95 (1.97)
Dis	5.13 (3.10)	5.30 (2.69)	5.35 (2.63)
BS	3.20 (2.14)	3.04 (1.95)	2.92 (1.97)
N	30	98	122

TAS, Thrill and Adventure Seeking; ES, Experience Seeking; Dis, Disinhibition; BS, Boredom Susceptibility.

The influence of birth-order position on sensation seeking was tested by means of MANOVA with the four SSS Scales, TAS, ES, Dis and BS as dependent variables and gender and birth order (first-born versus later-born) as factors, and age as covariate. There was no significant multivariate interaction term (Pillai's Trace=0.009, $F<1.0$) or main effect for birth-order [0.025, $F(4, 242)=1.53$, n.s.]. There was a significant effect of gender [Pillai's Trace=0.187, $F(4, 242)=13.89$, $P<0.01$] and Univariate F-tests confirmed that males obtained higher scores on all four scales (see Table 1 for mean scores). Similar results were obtained when only children, first-born and later-born were compared (see Table 2 for relevant mean scores) and when first-born and later- born were compared, but excluding only-children.

4. Discussion

The Cheek–Buss Shyness Scale has been extensively used in shyness research. It has satisfactory internal consistency and test–retest reliability and correlates highly with other established measures of social anxiety (Briggs & Smith, 1986). Scores on this scale were significantly, but moderately correlated with the total sensation seeking score and with each of the subscales. However, this relationship seems to hold specifically for the Disinhibition subscale, and this is also the case for males and female respondents, considered separately. Males obtain significantly

higher sensation seeking scores on all four subscales. This is in line with previous research that has identified gender differences in Total SSS score, TAS, Dis and BS, with few differences in ES (Zuckerman, 1994, pp. 100–101). Nevertheless, the relationship between sensation seeking and shyness is broadly similar for each gender. There is no explicit overlap in content between Disinhibition and Shyness Scale items. However, Disinhibition items refer to enjoyment of parties and sexual experiences. Post hoc analysis of differences between individuals in the shy and non-shy quartiles in responses to each of the Disinhibition scale items found significant differences in all items but two (these refer to seeking pleasures with the 'jet set' and feeling better after drinks, items perhaps less to do with social interaction). Shyness is wariness and inhibited behaviour in novel and potentially threatening social situations. These findings show that it is negatively correlated with sensation seeking in the social realm rather than with a tendency to seek for novel and intense sensations and experiences more generally. As Darwin (1872) argued, presenting an example of a soldier who is brave in battle but shy before strangers, shyness is a social phenomenon and is not necessarily linked with wariness and timidity in other areas of life.

This study failed to find a relationship between scores on the Cheek–Buss Scale and self- reported birth-order position, whether only child, first-born or later born. Although there are logical problems in drawing inferences from a failure to reject the null hypothesis, the balance of evidence seems to be against birth order position as a significant factor in trait shyness. The pat- tern that emerges from the literature is that studies incorporating self-report data fail to show the predicted relationship, and the only supportive findings come from one unpublished study involving parental reports on their children. The absence of a relationship might not be surprising in the light of evidence for genetic influence on shyness (Daniels & Plomin, 1985) and the related constructs of behavioral inhibition and social fears (Saudino, 2001) and for the

influence of parental attitudes and behaviour (Burgess, Rubin, Cheah, & Nelson, 2001). Our results imply that further exploration of these factors would be more productive for understanding the origins of individual differences in shyness.

There is no evidence in this study for a relationship between birth-order position and sensation seeking and no published studies have identified such a relationship. This trait also shows evidence of a genetic factor in individual differences. Fulker, Eysenck, and Zuckerman (1980) reported a heritability estimate of 58% in a sample of adults although this figure varies across the four subscales (Eysenck, 1983). Miles, van den Bree, Gupman, Newlin, Glantz, and Pickens (2001) argue that heritability estimates vary across a range of self-reported sensation seeking and risk taking behaviours; nevertheless genetic factors have a significant influence on these behaviours.

The findings are not presented as an argument against the significance of birth order for personality characteristics or social behaviour since careful studies do seem to show that it can be a factor that has predictive utility (e.g. Salmon & Daly, 1998). Rather, it adds to evidence that shyness and sensation seeking, as assessed by established self-report measures, seem to be independent of birth order position. However, this study has involved a sample of adults whose shyness might be influenced by a range of social factors and experiences, and it is possible that a relationship with birth order might be found among young children, where such factors are less salient. Future research could usefully explore the conditions in which birth order position might be associated with the onset and maintenance of shyness.

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